Process Water System Sequence of Operations

Process Water Control

Primary process water will be provided through the system in building 450, Utilities, see Johnson Controls, Inc. drawing 91-9-A-01A for the Sequence of Operations.

Local DI process water bridges will provide a secondary loop for each of the APS areas. The building operating engineer will enable the individual system by setting binary data point, 'System-C', ON from their appropriate ICS network terminal. The digital control panel, EN-21002 will open process water isolation valve, V-2-X, place the three way mixing valve under control and start the secondary circulating pump. Three way process water control valve, V-1-X will be modulated by digital control panel, EN-21002 to maintain a process water temperature setpoint of 90 F.(adjustable at an ICS terminal)

The digital controller panel will provide the start/stop command for each process water circulating pump and will monitor their status through feedback devices, differential pressure switches, PS-1 - PS-9. An alarm, 'Pump, P-# Failure' will be issued to the ISC network in the event of failure.

The status of the secondary filter system will be monitored by differential pressure switches, PS-4-PS-6. In the event that the differential pressure exceeds 20 PSI, an alarm, 'Dirty Filter Condition' will be sent to the ICS network.

High Process Water Supply Temperature Event

The digital controller will monitor the process water supply temperature through temperature elements, TE-1-TE-3. In the event that the supply water temperature exceeds 92 F.(adjustable) an alarm will be issued to the ICS network 'High Proc Wtr Sply Temp'

Process Water Bypass Control

As the two way valves to the APS equipment are operated, the flow demand to the system changes. Differential pressure transmitter, DPT-1-DPT-3 will read the differential pressure accross the supply and return water lines. The digital controller will modulate the process water bypass valve through its proportional band to maintain the a differential setpoint of 90 PSI.(Adjustable at an ICS terminal)

* To switch back to the primary pump, PMPRESET must be reset and the primary pump will start and the standby valves will close.

+ High Flow Event is reset by PW_RESET. First disable SYS_ENBL, then reset PW_RESET. Proceed with a normal startup.

Process Water Standby

In the event that the principle process water circulating pump fails, the standby pump may be enabled. The controller will automatically activate the standby mode by commanding the standby pump ON. The controller will perform the following sequence of events if this mode is activated.

1. Check to see if the High Flow Event is set on, if so do not activate the standby mode.

2. Disable principle circulating pump.

3. Open standby process water valves, V-3-X.

* 4. Enable standby process water pump.

High process water flow event +

In the event that the process water flow difference between the supply and the return segments of the system, as read by flow transmitters, FT-1-FT-3, exceeds a difference of 15 GPM(adjustable), the digital controller will set a High Flow Event. The system will be isolated by closing two position valve, V-2-X and disabling the circulating pump. The controller will also position the three way mixing valve to zero percent so that the the normally closed port is closed. An alarm, 'High process water flow' will be sent to the ICS network.

The following points will be adjustable from any ICS terminal:

-Process(DI) supply water temperature setpoint.
-Process water circulating pump standby designation.
-Process water differential flow setpoint.

The following points will be monitored and alarmed to the ICS network:

-Process water circulating, standby pumps status.
-Process water supply filter status.
-High process water supply temperature event.
-High process water flow rate event.
-UV lamp alarm for each DI water bridge.

Building ICS Alarms not related to the process water system:

The following points will be monitored and alarmed to the ICS network:

-Node room high temperature
-Low building temperature, col 185-C
-Low building temperature, col 184-B
-SP-701 high level
-CC pipe pit high level